
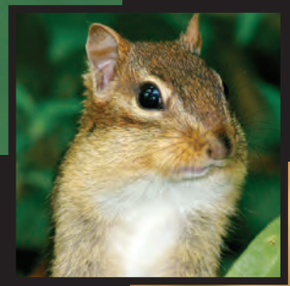


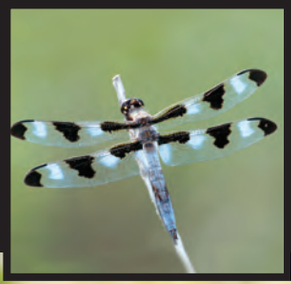









Conserving All Wildlife in Missouri

A Directory of Conservation Opportunity

Missouri's Comprehensive Wildlife Conservation Strategy

Photos by Jim Rathert, Missouri Department of Conservation

Missouri's Comprehensive Wildlife Conservation Strategy

Conserving All Wildlife in Missouri

A Directory of Conservation Opportunity

"Missouri is blessed with a rich and diverse natural heritage that is best conserved by improving healthy habitats for the widest variety of wildlife."

Dear Missourians,

Conservation opportunity is all around us: on the farm, in the city, at the edges of Ozark forests, in tall grasslands and in the current of Missouri's many rivers and streams. We are blessed with a rich and diverse natural heritage.

The Missouri Department of Conservation strives to conserve wildlife in the broadest sense – plants, animals, insects and all the rest. Fortunately, we do not face this challenge alone. Thousands of conservation-minded landowners desire to be good stewards of the land and natural resources. Many partners are committed to sharing resources and adopting common goals.

With the help of conservation partners and interested individuals, the Department has identified Conservation Opportunity Areas – some of the best places to conserve our native wildlife and their habitats. This framework of conservation opportunity indicates places where partners can combine efforts for all wildlife conservation.

It is my pleasure to introduce you to this Directory of Conservation Opportunity. We appreciate the many individuals, organizations and agencies that helped develop and shape Missouri's Conservation Opportunity Area framework.

Sincerely,

John Hoskins

John Hoskins
Director
Missouri Department of Conservation

Conserving All Wildlife in Missouri

A Directory of Conservation Opportunity

Missouri's Comprehensive Wildlife Conservation Strategy

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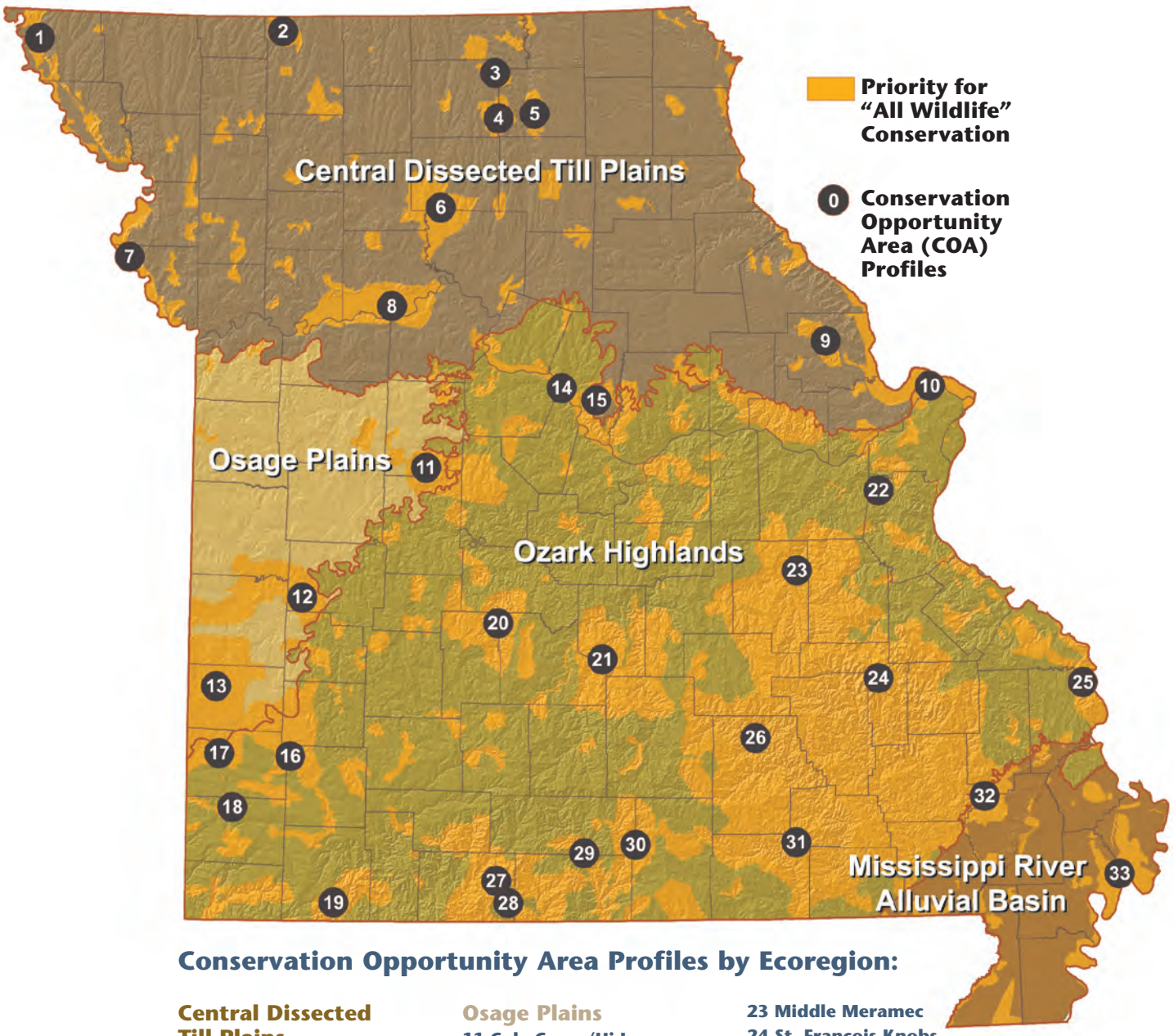
This directory was supported in part by the U.S. Fish and Wildlife Service, Division of Federal Assistance through a competitively awarded State Wildlife Grant.

Conservation Opportunity in Missouri



Conservation Opportunity Area Profiles by Ecoregion:

Central Dissected Till Plains

1 Loess Hills
2 Grand River Grasslands
3 Union Ridge
4 Mystic Plains
5 Thousand Hills Woodland
6 Lower Grand River
7 Iatan/Weston Missouri River Corridor
8 Wakenda Bottoms
9 Cuivre River Hills
10 Missouri/Mississippi River Confluence

Osage Plains

11 Cole Camp/Hi Lonesome
12 Marmaton/Wah'Kon-tah
13 Western Cherokee Grasslands

Ozark Highlands

14 Manitou Bluffs
15 Bonne Femme Karst
16 Golden Grasslands
17 Spring River
18 Shoal Creek
19 Roaring River
20 Niangua Basin
21 Upper Gasconade River Hills
22 LaBarque Creek Watershed
23 Middle Meramec
24 St. Francois Knobs
25 Cape Hills
26 Current River Hills
27 White River Glades and Woodlands
28 Tumbling Creek Cave Ecosystem
29 Bryant Creek
30 North Fork
31 Eleven Point Hills

Mississippi River Alluvial Basin

32 Mingo Basin
33 River Bends

Tumbling Creek Cave Ecosystem

Conservation Opportunity Area

Groundwater Protection Initiative

Ozark Highlands

Grotto Salamander

Causeyella Cave Millipede

Ozark Cave Amphipod

William R. Elliott, Missouri Department of Conservation

The term karst refers to a landscape pocketed with sinkholes, caves, springs and losing streams. Over time, water moving though the soil becomes slightly acidic and upon contact, dissolves minute quantities of limestone and dolomite bedrock. When repeated over eons, this process results in underground streams, caves and springs.

Isolation and time frequently result in groups of cave species unique to a region and in some cases, unique to an individual cave. Tumbling Creek Cave in Taney County, Missouri is a good example. In addition to being the only known location of the Tumbling Creek cavesnail, it is home to at least five other animals new to science.

Caves and karst systems are among the most threatened ecosystems in the United States. They are sensitive to land management that causes increased amounts of sediments and pollution to enter caves. In karst regions, sinkholes and losing streams carry sediment and pollution directly underground, degrading and destroying cave habitats while reducing groundwater quality. Protecting or establishing vegetated buffers along karst features (including losing streams and sinkholes) is important for karst conservation. Additionally, providing adequate on-site sewage treatment prevents groundwater pollution.

Sinkhole A surface depression where water is funneled underground.

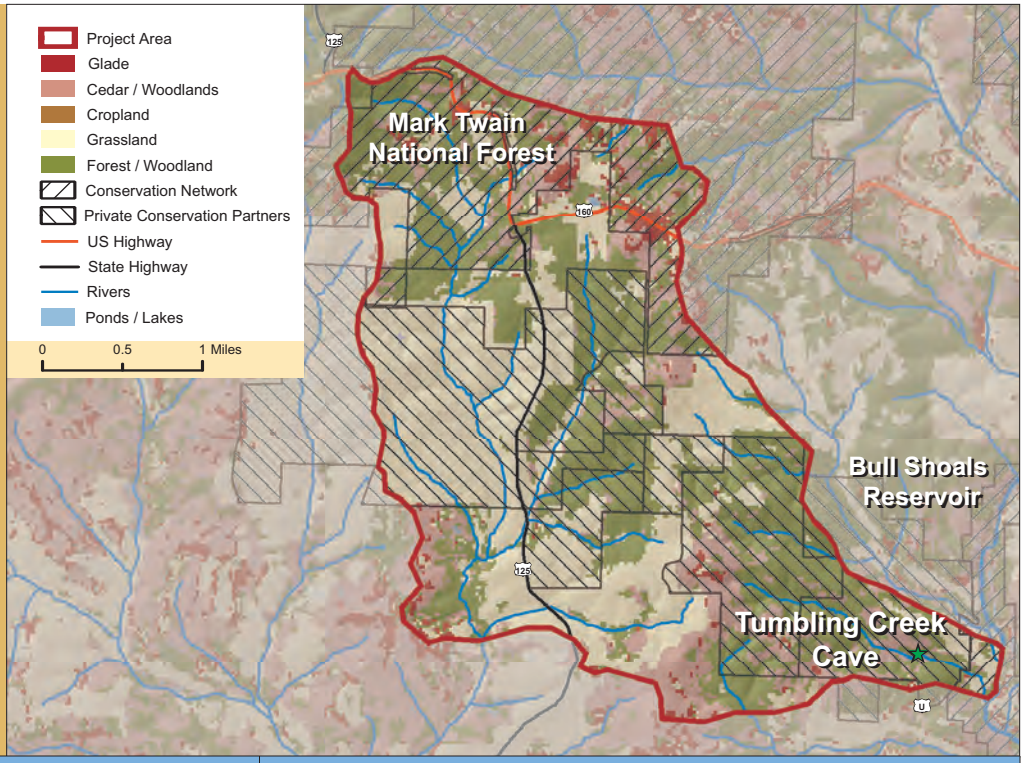
Losing Stream A stream that loses some or all of its surface flow to the underground.

Recharge Area The land area that contributes water to a cave or spring.

Landscape	Community	Species
Tumbling Creek Cave recharge area	Caves, sinkholes, losing streams	Ozark Cave Amphipod, Causeyella Cave Millipede, Tumbling Creek Cavesnail, Grotto Salamander

Strategic Conservation Goal:

Reduce sedimentation and pollution in the Tumbling Creek groundwater system by implementing erosion control efforts, protecting karst features and improving sewage treatment methods.



Desired Change	Proposed Monitoring
↑ Improved buffers around sinkholes and losing streams	Periodic assessment of land cover using satellite imagery or aerial photography; site inspections
↑ Improved sewage treatment	Site evaluations of individual septic systems
↑ Improved vegetation cover using planned grazing, wildlife-friendly grassland management, controlling gully erosion and natural community restoration	Periodic assessment of land cover using satellite imagery or aerial photography; site inspections

Tumbling Creek cavesnails are found only in Tumbling Creek Cave. The population was once estimated at 15,000. Today, as few as 20-40 remain. Water pollution and increased sedimentation are believed to be the primary threats to this tiny aquatic snail.

David C. Ashley, Missouri Western State College

To learn more about the Tumbling Creek Cave Ecosystem Groundwater Protection Initiative, please contact:

Missouri Department of Conservation
Wildlife Division
P.O. Box 180
Jefferson City, MO 65102-0180

Golden Grasslands

Conservation Opportunity Area

Golden Prairie Grassland Connectivity Initiative

Scissor-tailed Flycatcher

Bullsnake

Greater Prairie-chicken

Mead's Milkweed

The privately owned land near Missouri Prairie Foundation's Golden Prairie and The Nature Conservancy's Shelton Cook Memorial Meadow vicinity is a patchwork of native prairie, cool-season grasslands and cropland. The area is home to one of the last remaining populations of greater prairie-chickens in Missouri. Prairie-chickens need open country that is dominated by grasslands. Habitat fragmentation has reduced greater prairie-chickens in this area to less than 100 birds.

The Golden Prairie Grasslands Connectivity Initiative will work with willing private landowners to restore wildlife habitat and reduce fragmentation. Approximately 1,500 acres of restorable remnant prairies occur within the project area. Appropriate management techniques include removing trees from prairie soils, converting fescue fields to warm-season forage grasses and increasing the amount of native grasses and wildflowers.

Habitat fragmentation. The breaking up of a habitats into smaller, unconnected pieces; often due to human development, agriculture, etc.

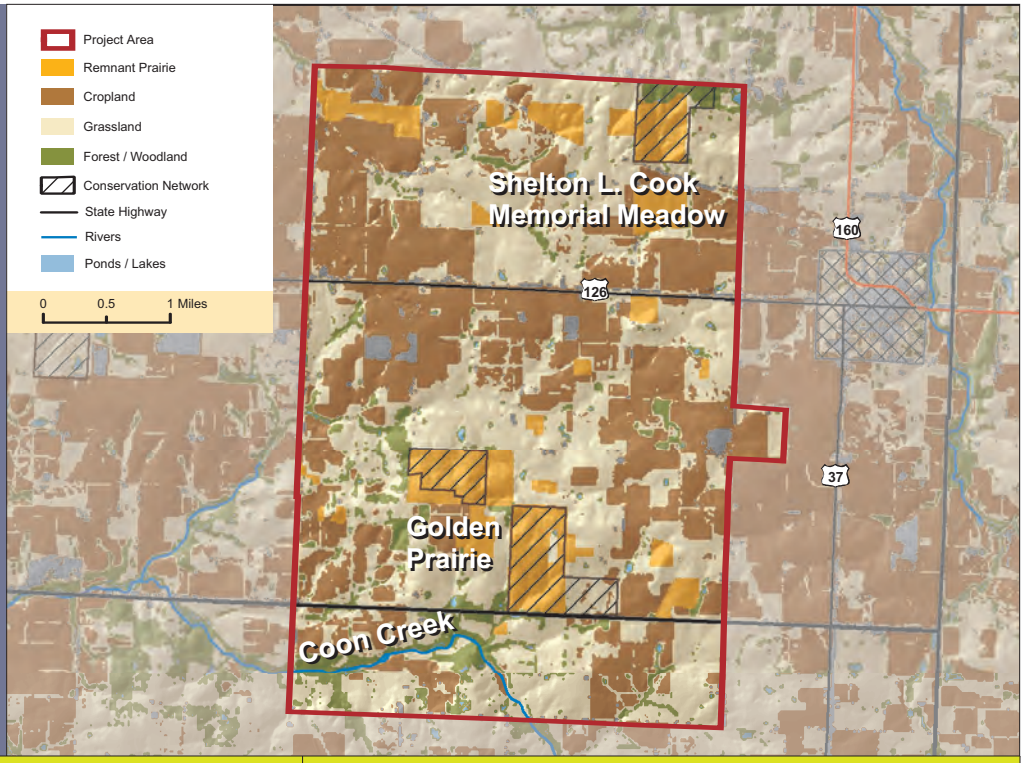
Connectivity. In areas with habitat fragmentation, increasing the quality of habitat between patches of remaining high-quality natural communities. For example, native pastures for grazing may be effective bridges between prairie hay meadows.

Landscape	Community	Species
Native prairie/ warm-season grassland complexes	Dry-mesic chert prairie, Dry-mesic limestone/ dolomite prairie, Dry-mesic sandstone/shale prairie, Hardpan prairie, Prairie swale	Mead's Milkweed, Oklahoma Sedge, Wolf's Spike Rush, Prairie Mole Cricket, Regal Fritillary, Grassland Crayfish, Northern Crawfish Frog, Slender Glass Lizard, Bullsnake, Ornate Box Turtle, Bell's Vireo, Dickcissel, Eastern Meadowlark, Grasshopper Sparrow, Greater prairie-chicken, Henslow's Sparrow, Loggerhead Shrike, Scissor-tailed Flycatcher, Swainson's Hawk, Upland Sandpiper, Prairie Vole, Hispid Cotton Rat

Photos by Jim Rathert, Missouri Department of Conservation

Strategic Conservation Goal:

Build connectivity for grassland wildlife by promoting conservation actions on 5,000 acres of private land and the existing conservation network.



Desired Change	Proposed Monitoring
↓ Decreased amount of trees on prairie soils	Periodic assessment of land cover using satellite imagery or aerial photography
↑ Increased acres of prescribed fire management and patch-burn grazing	Acres benefited as reported by MDC Private Lands program monitoring
↓ Decreased acres of grassland dominated by fescue	Periodic assessment of land cover using satellite imagery or aerial photography
↑ Increased acres of cropland restored to native grasses and prairie forbs	Periodic assessment of land cover using satellite imagery or aerial photography
↓ Declining amount of serecia lespedeza due to active control methods	Field visits and regular site evaluations
↑ Improved native plant community composition on remnant prairies	Vegetation sampling to detect changes in conservative prairie plants at 3-year intervals
↑ Increasing numbers of prairie-chickens	Population trend of prairie-chickens annually

To learn more about the Golden Prairie Grassland Connectivity Initiative, please contact:

Missouri Department of Conservation
Wildlife Division
P.O. Box 180
Jefferson City, MO 65102-0180

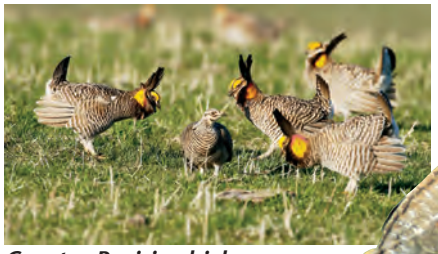
Golden Grasslands

Conservation Opportunity Area

Stony Point Grassland & Shrubland Restoration Initiative

Henslow's Sparrow

Regal Fritillary



Greater Prairie-chickens

Broad, flat prairies and scattered savannas once dominated the Stony Point project area. Today, the landscape contains a mixture of fescue pastures, hay meadows and crop fields with timber scattered on the roughest lands. Over 4,000 acres of restorable remnant prairies and savannas remain in the Stony Point project area. The Missouri Department of Conservation recently designated this landscape a Quail Focus Area. The Department and quail conservation partners are committing more resources to the area for grassland, shrubland and savanna habitat restoration.

The Stony Point Grassland and Shrubland Restoration Initiative will work with willing private landowners to improve wildlife habitat and restore prairie and savanna natural communities. Appropriate management techniques include prescribed burns, fescue-field conversions to native plants and implementing grazing systems that are wildlife-friendly.

Prairie. A habitat dominated by grasses and wildflowers with scattered shrubs and very few trees.

Savanna. Grasslands with widely scattered trees and shrubs; sparsely timbered areas associated with prairies. Shrubs are a significant part of some savanna landscapes. When dominated by low woody plants, it may be called a shrubland.

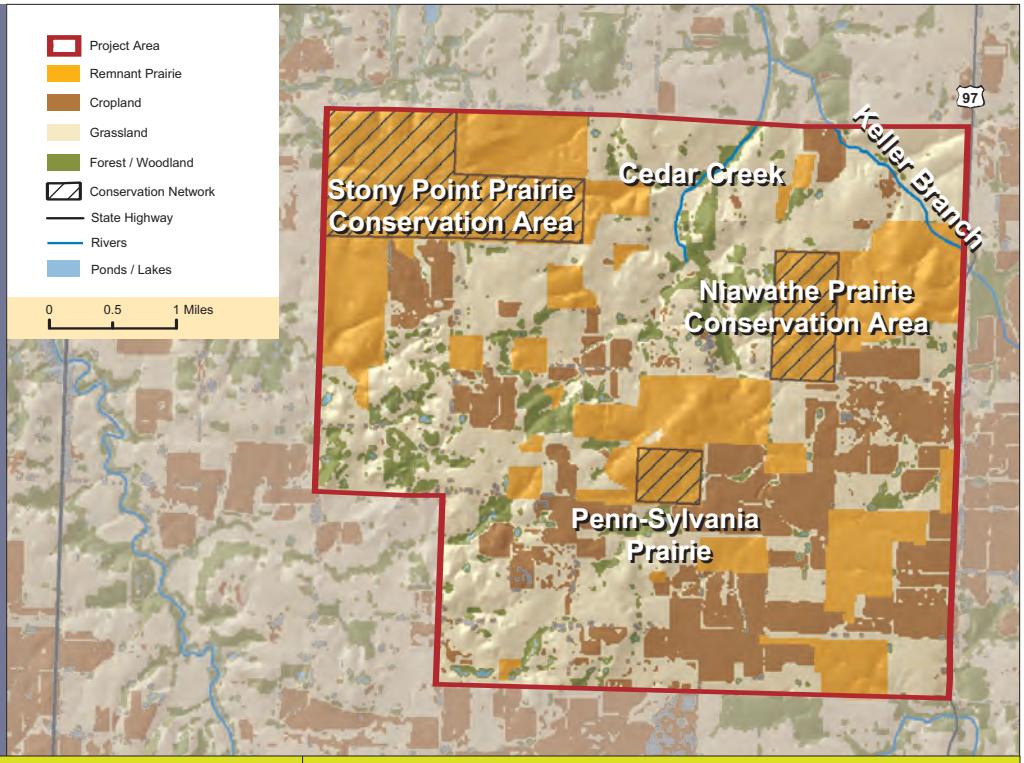
Northern Bobwhite

Landscape	Community	Species
Native prairie and warm-season grassland complexes with savanna and shrub components	Dry-mesic sandstone/ shale prairie, Hardpan prairie	Mead's Milkweed, Prairie Mole Cricket, Regal Fritillary, Grassland Crayfish, Great Plains Narrow-mouthed Toad, Northern Crawfish Frog, Bullsnake, Ornate Box Turtle, Bell's Vireo, Dickcissel, Eastern Meadowlark, Grasshopper Sparrow, Greater prairie-chicken, Henslow's Sparrow, Loggerhead Shrike, Scissor-tailed Flycatcher, Swainson's Hawk, Upland Sandpiper, Prairie Vole, Hispid Cotton Rat
	Limestone/ dolomite savanna, Sandstone savanna	Eastern Tiger Salamander, Broad-headed Skink, Northern Fence Lizard, Three-toed Box Turtle, Blue-winged Warbler, Brown Thrasher, Field Sparrow, Harris's Sparrow, Northern Bobwhite; Prairie Warbler

Photos by Jim Rathert, Missouri Department of Conservation

Strategic Conservation Goal:

Build connectivity for grassland and shrubland wildlife by promoting conservation actions on 5,000 acres of private land and the existing conservation network.



Desired Change	Proposed Monitoring
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↑ Improved native plant community composition on remnant prairies	Vegetation sampling to detect changes in conservative prairie plants at 3-year intervals
↑ Increasing numbers of prairie-chickens	Population trend of prairie-chickens annually
↑ Increasing populations of northern bobwhite quail	Population trend using annual quail monitoring data

To learn more about the Stony Point Grassland and Shrubland Restoration Initiative, please contact:

Missouri Department of Conservation
Wildlife Division
P.O. Box 180
Jefferson City, MO 65102-0180